

U.S. Application 09/619,560

Attorney Docket No. 2000B047

**AMENDED CLAIMS:**

1. (Currently Amended) A process for producing a monoalkylated aromatic compound comprising the step of contacting a polyalkylated aromatic compound with an alkylatable aromatic compound under at least partial liquid phase conditions and in the presence of a transalkylation catalyst to produce a monoalkylated aromatic compound, wherein the transalkylation catalyst comprises a mixture of at least :
  - (i) a first crystalline molecular sieve having an X-ray diffraction pattern including d-spacing maxima at  $12.4 \pm 0.25$ ,  $6.9 \pm 0.15$ ,  $3.57 \pm 0.07$  and  $3.42 \pm 0.07$  Angstrom; and
  - (ii) a second crystalline molecular sieve different from the first molecular sieve and selected from zeolite beta and mordenite,

~~the percentage by weight of the first crystalline molecular sieve and the percentage by weight of the second crystalline molecular sieve in said transalkylation catalyst being percentages, based on the total weight of molecular sieve in the transalkylation catalyst, effective to reduce the concentration of any one or more by products below the concentration of that by product which is determined by calculating the linear weighted average of the concentrations of that by product resulting from the use of each of the molecular sieves individually as a catalyst for transalkylation under the same conditions, excluding WHSV, all such concentrations being determined with respect to the weight of monoalkylated aromatic compound produced at a given conversion percentage of the polyalkylated aromatic compound.~~
2. (Cancelled)
3. (Previously Presented) The process of claim 1, wherein the first crystalline molecular sieve is selected from MCM-22, MCM-36, MCM-49 and MCM-56.

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4. (Previously Presented) The process of claim 1, wherein the second crystalline molecular sieve comprises TEA-mordenite having an average crystal size of less than 0.5 micron.
5. (Previously Presented) The process of claim 1, wherein the transalkylation catalyst comprises about 15 to about 50% by weight of the first crystalline molecular sieve based on the total weight of molecular sieve material in the catalyst.
6. (Original) The process of claim 1, wherein the transalkylation catalyst is produced by coextrusion of said mixture of at least two different crystalline molecular sieves.
7. (Original) The process of claim 1, wherein the alkyl groups of the polyalkylated aromatic compound have 1 to 5 carbon atoms.
8. (Original) The process of claim 1, wherein the polyalkylated aromatic compound is polyisopropylbenzene and the alkylatable aromatic compound is benzene.
9. (Previously Presented) The process of claim 1, wherein said contacting step is conducted at a temperature of 100 to 260°C, a pressure of to 10 to 50 barg (1100 to 5100 kPa), and a weight hourly space velocity of 1 to 10 on total feed, and a weight ratio of alkylatable aromatic compound to polyalkylated aromatic compound of 1:1 to 6:1.
10. (Currently Amended) A process for producing a monoalkylated aromatic compound comprising the steps of:
  - (a) contacting an alkylatable aromatic compound with an alkylating agent in the presence of an alkylation catalyst to provide a product comprising said

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monoalkylated aromatic compound and a polyalkylated aromatic compound, and then

- (b) contacting the polyalkylated aromatic compound from step (a) with said alkylatable aromatic compound under at least partial liquid phase conditions and in the presence of a transalkylation catalyst to produce a monoalkylated aromatic compound, wherein the transalkylation catalyst comprises a mixture of at least :

- (i) a first crystalline molecular sieve having an X-ray diffraction pattern including d-spacing maxima at  $12.4 \pm 0.25$ ,  $6.9 \pm 0.15$ ,  $3.57 \pm 0.07$  and  $3.42 \pm 0.07$  Angstrom; and
- (ii) a second crystalline molecular sieve different from the first molecular sieve and selected from zeolite beta and mordenite;

~~the percentage by weight of the first crystalline molecular sieve and the percentage by weight of the second crystalline molecular sieve in said transalkylation catalyst being percentages, based on the total weight of molecular sieve in the transalkylation catalyst, effective to reduce the concentration of any one or more by products below the concentration of that by product which is determined by calculating the linear weighted average of the concentrations of that by product resulting from the use of each of the molecular sieves individually as a catalyst for transalkylation under the same conditions, excluding WHSV, all such concentrations being determined with respect to the weight of monoalkylated aromatic compound produced at a given conversion percentage of the polyalkylated aromatic compound.~~

- 11. (Original) The process of claim 10, wherein the alkylation step (a) is conducted under at least partial liquid phase conditions.
- 12. (Original) The process of claim 10, wherein the alkylating agent includes an alkylating aliphatic group having 1 to 5 carbon atoms.

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13. (Original) The process of claim 10, wherein the alkylating agent is propylene and the alkylatable aromatic compound is benzene.
14. (Original) The process of claim 10, wherein the alkylation catalyst of step (a) is selected from MCM-22, MCM-49, MCM-56 and zeolite beta.
15. (Cancelled)
16. (Previously Presented) The process of claim 10, wherein the first crystalline molecular sieve of the transalkylation catalyst of step (b) is selected from MCM-22, MCM-36, MCM-49 and MCM-56.
17. (Previously Presented) The process of claim 10, wherein the second crystalline molecular sieve of the transalkylation catalyst of step (b) comprises TEA-mordenite having an average crystal size of less than 0.5 micron.
18. (Previously Presented) The process of claim 10, wherein the transalkylation catalyst of step (b) comprises about 15 to about 50% by weight of the first crystalline molecular sieve based on the total weight of molecular sieve material in the catalyst.
19. (Currently Amended) A process for producing cumene comprising the steps of:
  - (a) contacting benzene with propylene under at least partial liquid phase conditions and in the presence of an alkylation catalyst to provide a product comprising cumene and polyisopropylbenzenes, and then
  - (b) contacting the polyisopropylbenzenes from step (a) with benzene under at least partial liquid phase conditions and in the presence of a transalkylation catalyst to produce further cumene, wherein the transalkylation catalyst comprises a mixture of at least:

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- (i) a first crystalline molecular sieve having an X-ray diffraction pattern including d-spacing maxima at  $12.4 \pm 0.25$ ,  $6.9 \pm 0.15$ ,  $3.57 \pm 0.07$  and  $3.42 \pm 0.07$  Angstrom; and
- (ii) a second crystalline molecular sieve different from the first molecular sieve and selected from zeolite beta and mordenite;

~~the percentage by weight of the first crystalline molecular sieve and the percentage by weight of the second crystalline molecular sieve in said transalkylation catalyst being percentages, based on the total weight of molecular sieve in the transalkylation catalyst, effective to reduce the concentration of any one or more by products below the concentration of that by product which is determined by calculating the linear weighted average of the concentrations of that by product resulting from the use of each of the molecular sieves individually as a catalyst for transalkylation under the same conditions, excluding WHSV, all such concentrations being determined with respect to the weight of cumene produced at a given conversion percentage of the polyisopropylbenzenes.~~

- 20. (Previously Presented) The process of claim 1, wherein the first crystalline molecular sieve is MCM-22.
- 21. (Previously Presented) The process of claim 20 wherein the second crystalline molecular sieve is TEA-mordenite.
- 22. (Previously Presented) The process of claim 10, wherein the first crystalline molecular sieve is MCM-22 and the second crystalline molecular sieve is TEA-mordenite.
- 23. (Previously Presented) The process of claim 1, wherein the transalkylation catalyst comprises about 15 to about 50% by weight of the second crystalline molecular sieve based on the total weight of molecular sieve material in the catalyst.

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24. (Previously Presented) The process of claim 10, wherein the transalkylation catalyst comprises about 15 to about 50% by weight of the second crystalline molecular sieve based on the total weight of molecular sieve material in the catalyst.

25-26 (Cancelled)